

Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed June 25, 2004. The fee for addition of new claims is included herewith.

Claims 1-112 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-112. The present Response amends Claims 1, 17, 20, 21, 48, 50, 51, 53, 61, 63, 67-70, 75, 77, 79 and 84, cancels Claims 5, 6, 10-16, 25, 26, 28-47, 49, 52, 54, 59, 60, 62, 64, 66, 71-74, 78 and 86-112, and adds new Claims 113-128, leaving for the Examiner's present consideration claims 1-4, 7-9, 17-24, 27, 48, 50, 51, 53, 55-58, 61, 63, 65, 67-70, 75-77, 79-85 and 113-128. Reconsideration of the rejections is requested.

I. REJECTION UNDER 35 U.S.C. §102(B) OVER *TOROK, ET AL.* (U.S. PATENT 4,812,711)

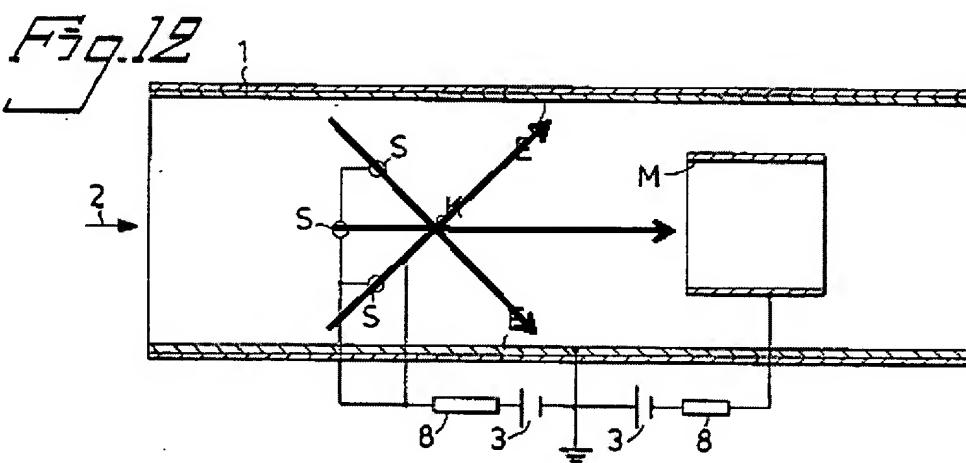
Claims 1-6, 8, 10-14, 24, 25, 27-33, 35, 37, 38, 47-58, 65, 66, 75-78, 80, 81, 83, 89, 102 and 104

The Examiner rejected Claims 1-6, 8, 10-14, 24, 25, 27-33, 35, 37, 38, 47-58, 65, 66, 75-78, 80, 81, 83, 89, 102 and 104 under 35 U.S.C. §102(b) as being anticipated by *Torok*. Applicants request cancellation of Claims 5, 6, 10-14, 25, 28-33, 35, 37, 38, 47, 49, 52, 54, 66, 78, 89, 102 and 104. Applicants respectfully traverse the rejection of Claims 1-4, 8, 24, 27, 48, 50, 51, 53, 55-58, 65, 75-77, 80, 81 and 83.

In the Office Action, the Examiner describes *Torok* as teaching an arrangement for transporting air wherein "in order to prevent ions from migrating upstream from the corona electrode K, a screen electrode S...is arranged upstream of the corona electrode K and connected thereto...in principle, the screen electrode S is given a geometric configuration and position relative to the corona electrode K such that the screen electrode S forms an equipotential barrier surface, which is impermeable to ions emanating from the corona electrode K." See OA, page 2-3. However, *Torok* fails to describe an arrangement including "a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein the focus electrode, the first electrode, and the corresponding second electrode are aligned" as recited in Claim 1, an arrangement including "a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein each of the focus electrodes is arranged so that the focus electrode, the first electrode, and a corresponding second electrode are aligned" as recited in Claims 48 and 75, or a method comprising "focusing particulate matter within the flow of air toward said second electrode from a position upstream of said first electrode" as recited in Claim 50.

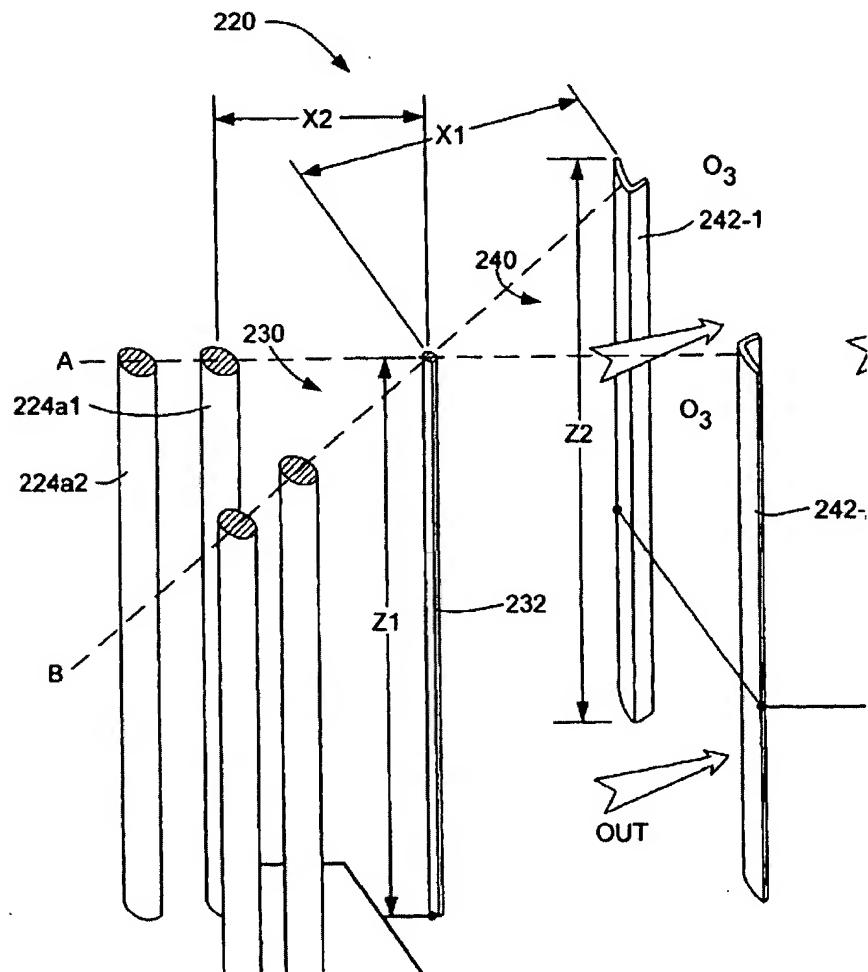
As stated in *Torok*, the problem addressed by *Torok* is "components...located in the vicinity of

the inlet to the airflow duct of the arrangement can serve as electrically conductive surfaces to which a stream of ions can migrate from the corona electrode upstream in the duct.” See col. 6, line 4-14. *Torok* proposes a solution including “effectively screening the corona electrode in the upstream direction, so that no ion current is able to flow from the corona electrode in the upstream direction, or at least so that any ion current able to flow in the upstream direction is only very small and travels through only a very short distance.” See col. 6, lines 33-38. *Torok* teaches blocking ion migration upstream. *Torok* fails to describe urging the flow of air toward the collector electrodes. For example, referring to Fig. 12 of *Torok* (shown below), the screen electrodes S are arranged upstream of the corona electrode K to most effectively form an equipotential barrier surface, impermeable to ions emanating from the corona electrode K. As illustrated by the added direction arrows, the screen electrodes S are aligned with the emitter electrode K, and either aligned with the walls of a duct, or through the center of the target electrode M.



However, as stated in the Specification of the present invention, the claims recite a geometry in which the “focus electrode 224 directs the airflow, and ions generated by the first electrode 232, towards the second electrodes 242.” See paragraph [0090]. Referring to Fig. 7C of the present invention (shown below), each focus electrodes 224 is aligned with the first electrode 232 and a corresponding second electrode 242 (along lines A and B). As described in paragraph [0093] of the Specification, “the particles within the

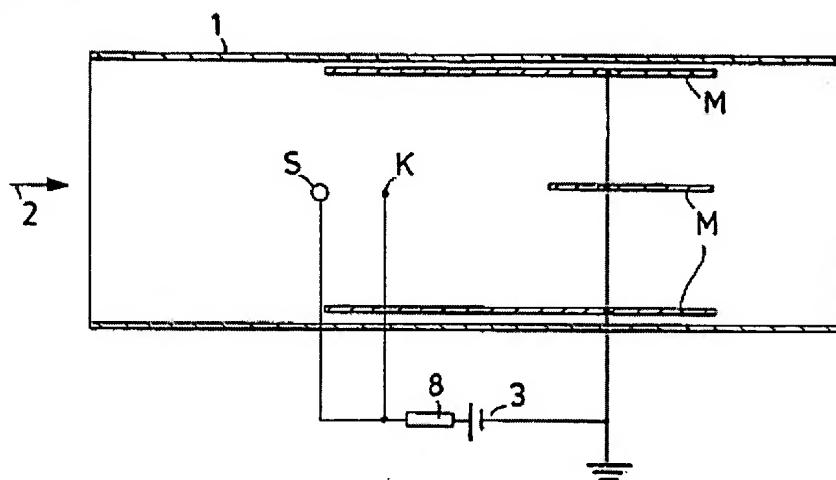
airflow are positively charged by the ions generated by the first electrode 232...the third focus electrode 224...directs the airflow towards the second electrodes 242 by guiding the charged particles toward the trailing sides 244 of each second electrode 242...It is believed that the airflow will travel around the third focus electrode 224, partially focusing the airflow towards the trailing sides 244, *improving the collection rate of the electrode assembly 220*" (Emphasis added). The present invention includes an arrangement whereby collection of particulate matter by the second electrodes is intended to be improved. Nowhere does *Torok* describe such an arrangement.



Referring to Fig. 9 of *Torok* (shown below), a target electrode M is shown having a plate substantially aligned with the screen electrode S and the corona electrode K. However, in such an arrangement, neither the screen electrode S, or the target electrode M is arranged off-center relative to the

centerline of the corona electrode. It is noted that it is believed that such an arrangement will not achieve the desired improvement in particulate matter collection as will an arrangement as recited in Claims 1, 48, 50 and 75.

Fig. 9



Since *Torok* fails to disclose an arrangement including "a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein the focus electrode, the first electrode, and the corresponding second electrode are aligned" as recited in Claim 1, an arrangement including "a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein each of the focus electrodes is arranged so that the focus electrode, the first electrode, and a corresponding second electrode are aligned" as recited in Claims 48 and 75, or a method comprising "focusing particulate matter within the flow of air toward said second electrode from a position upstream of said first electrode" as recited in Claim 50, *Torok* cannot anticipate Claims 1, 48, 50 and 75 under 35 U.S.C. §102(b). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* cannot anticipate dependent Claims 2-4, 8, 24, 27, 51, 57, 58 and 65 (which ultimately depend from Claim 1), Claim 53 (which depends from Claim 48), Claims 55 and 56 (which depend from Claim 50), and Claims 76, 77, 80, 81 and 83 (which ultimately depend from Claim 75) under 35 U.S.C. §102(b). Accordingly, Applicants respectfully request the withdrawal of this rejection.

II. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK, ET AL.* (U.S. PATENT 4,812,711)

Claims 1-19, 22-41, 44-58, 65, 66, 75-78, 80-83, 89, 94, 98, 99 and 102

The Examiner rejected Claims 1-19, 22-41, 44-58, 65, 66, 75-78, 80-83, 89, 94, 98, 99 and 102 under 35 U.S.C. §103(a) as being unpatentable over *Torok*. Applicants request cancellation of Claims 5, 6, 10-16, 25, 28-33, 35, 37, 38, 47, 49, 52, 54, 66, 78, 89 and 102. Applicants respectfully traverse the rejection of Claims 1-4, 7-9, 17-19, 22-24, 26, 27, 34, 36, 39, 40, 44-46, 48, 50, 51, 53, 55-58, 75-77, 80-83, 94, 98 and 99.

For the reasons given above in Section I, Applicants assert that *Torok* fails to teach or suggest all of the features of Claims 1, 48, 50 and 75. Because *Torok* fails to teach or suggest all of the features of Claims 1, 48, 50 and 75, *Torok* cannot render Claims 1, 48, 50 and 75 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* cannot render unpatentable dependent Claims 2-4, 7-9, 17-19, 22-24, 27, 51, 57, 58 and 65 (which ultimately depend from Claim 1), Claim 53 (which depends from Claim 48), Claims 55 and 56 (which depend from Claim 50), and Claims 76, 77, 80, 81 and 83 (which ultimately depend from Claim 75) under 35 U.S.C. §103(a) over *Torok*. Accordingly, Applicants respectfully request the withdrawal of this rejection.

III. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK, ET AL.* (U.S. PATENT 4,812,711) IN VIEW OF *SAKAKIBARA, ET AL.* (U.S. PATENT 4,643,745)

Claims 20, 21, 42, 43 and 101

The Examiner rejected Claims 20, 21, 42, 43 and 101 under 35 U.S.C. §103(a) as being unpatentable over *Torok* in view of *Sakakibara*. Applicants request cancellation of Claims 42, 43 and 101. Applicants respectfully traverse the rejection of Claims 20 and 21.

For the reasons given above in Section I, Applicants assert that *Torok* fails to teach or suggest all of the features of Claim 1. *Sakakibara* fails to remedy this deficiency. Nowhere does *Sakakibara* teach or suggest an arrangement including “a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein the focus electrode, the first electrode, and the corresponding second electrode are aligned” as recited in Claim 1. Because *Torok* in view of *Sakakibara* fails to teach or suggest all of the features of Claim 1, *Torok* in view of *Sakakibara* cannot render Claim 1 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* in view of *Sakakibara* cannot render unpatentable dependent

Claims 20 and 21 (which depend from Claim 1) under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

IV. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK* IN VIEW OF *SAKAKIBARA* AND FURTHER IN VIEW OF *WANG* (U.S. PATENT 5,702,507)

Claims 59-64, 67-74 and 112

The Examiner rejected Claims 59-64, 67-74 and 112 under 35 U.S.C. §103(a) as being unpatentable over *Torok* in view of *Sakakibara* and further in view of *Wang*. Applicants request cancellation of Claims 59, 60, 62, 64, 71-74 and 112. Applicants respectfully traverse the rejection of Claims 61, 63 and 67-70.

For the reasons given above in Section I and III, Applicants assert that *Torok* in view of *Sakakibara* fails to teach or suggest all of the features of Claims 1 and 48. *Wang* fails to remedy this deficiency. Nowhere does *Wang* teach or suggest an arrangement including “a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein the focus electrode, the first electrode, and the corresponding second electrode are aligned” as recited in Claim 1 or an arrangement including “a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein each of the focus electrodes is arranged so that the focus electrode, the first electrode, and a corresponding second electrode are aligned” as recited in Claim 48. Because *Torok* in view of *Sakakibara* in further view of *Wang* fails to teach or suggest all of the features of Claims 1 and 48, *Torok* in view of *Sakakibara* in further view of *Wang* cannot render Claims 1 and 48 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* in view of *Sakakibara* in further view of *Wang* cannot render unpatentable dependent Claims 61 and 67-70 (which depend from Claim 1) and Claim 63 (which depends from Claim 48) under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

V. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK* IN VIEW OF *SAKAKIBARA* AND FURTHER IN VIEW OF *SHIBUYA ET AL.* (U.S. PATENT 3,803,808)

Claims 79, 86-88, 90 and 100

The Examiner rejected Claims 79, 86-88, 90 and 100 under 35 U.S.C. §103(a) as being unpatentable over *Torok* in view of *Sakakibara* and further in view of *Shibuya*. Applicants request

cancellation of Claims 86-88, 90 and 100. Applicants respectfully traverse the rejection of Claim 79.

For the reasons given above in Section I, Applicants assert that *Torok* in view of *Sakakibara* fails to teach or suggest all of the features of Claim 75. *Shibuya* fails to remedy this deficiency. Nowhere does *Shibuya* teach or suggest an arrangement including “a first electrode having a centerline...a pair of second electrodes arranged off-center relative to the centerline...wherein each of the focus electrodes is arranged so that the focus electrode, the first electrode, and a corresponding second electrode are aligned” as recited in Claim 75. Because *Torok* in view of *Sakakibara* in further view of *Shibuya* fails to teach or suggest all of the features of Claim 75, *Torok* in view of *Sakakibara* in further view of *Shibuya* cannot render Claim 75 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* in view of *Sakakibara* in further view of *Shibuya* cannot render unpatentable dependent Claim 79 (which ultimately depends from Claim 75) under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

VI. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK* IN VIEW OF *SHIBUYA*

Claims 75, 84, 85, 91-93, 103 and 105-111

The Examiner rejected Claims 75, 84, 85, 91-93, 103 and 105-111 under 35 U.S.C. §103(a) as being unpatentable over *Torok* in view of *Shibuya*. Applicants request cancellation of Claims 91-93, 103 and 105-111. Applicants respectfully traverse the rejection of Claim 75, 84 and 85.

For the reasons given above in Section I and V, Applicants assert that *Torok* in view of *Shibuya* fails to teach or suggest all of the features of Claim 75. Because *Torok* in view of *Shibuya* fails to teach or suggest all of the features of Claim 75, *Torok* in view of *Shibuya* cannot render Claim 75 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Torok* in view of *Shibuya* cannot render unpatentable dependent Claim 74 and 85 (which ultimately depend from Claim 75) under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

VII. REJECTION UNDER 35 U.S.C. §103(A) OVER *TOROK* IN VIEW OF *SHIBUYA*

Claims 95-97

The Examiner rejected Claims 95-97 under 35 U.S.C. §103(a) as being unpatentable over *Torok* in view of *Shibuya*. Applicants request cancellation of Claims 95-97. Accordingly, Applicants respectfully request the withdrawal of this rejection.

VIII. ADDITION OF CLAIMS 113-128

The newly added claims are, it is submitted, allowable over the cited art.

IX. CONCLUSION

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: 10/25/01

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